

Coal Fly Ash Release

Fact Sheet



Revised as of December 17, 2009

December 22 marks one year since the coal ash disaster at the TVA Kingston facility. The December Monthly Update will feature key information from the last month, and also a review of this past year. A great deal of progress at the site has been made, and there is a great deal left to do. The department remains committed to working in partnership with the U.S. Environmental Protection Agency to oversee cleanup at the site and to keeping the community informed through the department's TVA Kingston Update Web site, monthly updates, information to media, public availability sessions and public meetings.

MONTHLY UPDATE

TDEC Advisory Board Report – December 1, 2009

On Dec. 1, Environment and Conservation Commissioner Jim Fyke and Deputy Commissioner Paul Sloan announced the receipt of a report by the Advisory Board put in place by TDEC, following the TVA Kingston coal ash spill.

The report is titled, "Lessons Learned from the TVA Kingston Dredge Cell Containment Facility Failure: TDEC Advisory Board Recommendations for Safe Performance." It outlines the primary issues found at the TVA Kingston facility, discusses the ongoing evaluation of other TVA facilities, discusses the Root Cause Analysis initially published by AECOM in June 2009, and makes several recommendations for future management of coal ash in Tennessee.

Immediately following the spill, Governor Phil Bredesen directed the department to undertake a comprehensive review of all rules and regulations governing the management of coal ash and determine how they need to evolve. The Advisory Board's report will help in that process. Department personnel are working currently to see how the recommendations in the report can be incorporated into permitting requirements and processes. In regard to any change in current law, it will ultimately be up to the legislature whether the law will be changed.

The Advisory Board report is available on the TVA Kingston Update page of TDEC's Web site at http://www.state.tn.us/environment/kingston/adv_board_report.shtml.

Site Statistics Update

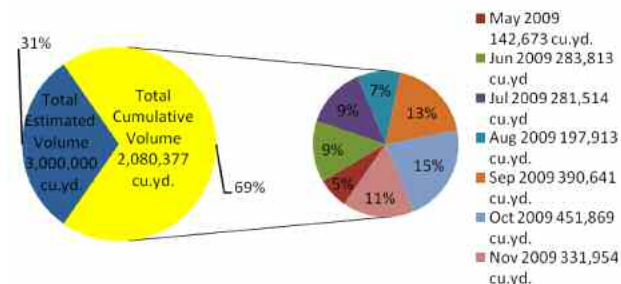
More than two million cubic yards of the estimated three million cubic yards of the ash released into the Emory River and Swan Pond Embayment have been recovered and removed from the water. River dredging operations and excavating from dry areas continues on-site. Approximately 739,000 cubic yards has been shipped off-site by rail for disposal in an approved landfill in Alabama. This number has changed from the previous report, where the disposal numbers were misreported in tons rather than cubic yards. We apologize for any confusion this may have caused.

Time Critical Ash Removal

Goal	= 3 million cubic yards by Spring 2010 at 15,000 cubic yards per day removal rate
11/30/09 (YTD)	= 2,080,377 cubic yards (1,449,298 from river and 554,479 from embayment)
11/1-30/09	= 331,954 cubic yards removed in 22 workdays = 15,088 cubic yards daily average

*Estimated completion is approximately March 1, 2010
based on 919,623 cubic yards remaining at a 15,000 cubic
yards per day removal rate at 6 workdays per week.*

Monthly Ash Removal

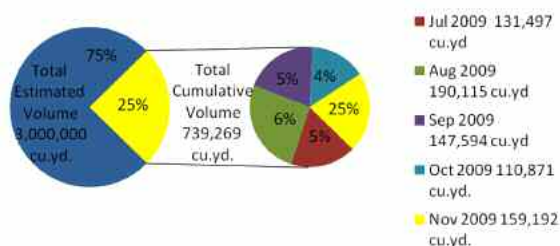


Time Critical Ash Disposal

Goal	= 3 million cubic yards disposed off-site by Fall 2010 at 10,000 cubic yards per day shipping rate
11/30/09 (YTD)	= Shipped 739,269 cubic yards (1.3 tons is equivalent to one cubic yard)
11/1-30/09	= Shipped 159,192 cubic yards in 22 work days = 7,236 cubic yards daily average

Estimated completion is approximately September 1, 2010 based on 2,260,731 cubic yards remaining at 10,000 cubic yards per day shipping rate at 6 workdays per week.

Monthly Ash Disposal



NOTE: Disposal numbers were previously misreported in tons rather than cubic yards. The department is tracking total quantities of ash removed and ash sent for disposal off-site in cubic yards for comparison purposes. As stated above, 1.3 tons is equivalent to one cubic yard.

Long Term Recovery Phase – Public Comment Period Extended

The public comment period for the Engineering Evaluation and Cost Analysis (EE/CA) work plan has been extended to December 20, 2009. This plan describes the remedy alternatives for restoring the area once the ash is removed from the Emory River. The document is currently available for review and comment, as is the Draft Community Involvement Plan, at EPA's Web site at www.epakingstontva.com in the "Document Libraries" section under "Non-time Critical Removal."

Gypsum Pond Notice of Violation – November 25, 2009

Unrelated to the ash spill, but related to operations at the TVA Kingston Plant, TDEC issued a Notice of

Violation for a loss of water from the Flue Gas Desulfurization Stormwater Pond. The NOV cites TVA for failing to make timely notification of a possible leak as required by permit, and for an unpermitted discharge. It requires investigation and corrective action. The Notice of Violation and TVA's response is posted on the department's Web site at http://www.state.tn.us/environment/kingston/community_guidance.shtml. The department is currently in the process of reviewing the adequacy of the response.

Rust Deposition – November 24, 2009

Unrelated to the ongoing spill cleanup, but related to operations at the plant, on November 24, TVA notified the Department of Environment and Conservation that a TVA employee noticed a rust-colored material on cars in the Kingston plant parking lot. This occurred when TVA was performing maintenance activities on units that had not recently been in service. The maintenance involved heating water in tubes in the boiler using fuel oil, then draining the tubes to minimize rusting in the system. TVA sampled the material found in the plant parking lot and provided a sample to TDEC for analysis. TDEC responded to the area and canvassed the Swan Pond community looking for evidence of off-site deposition. None was found. Visual inspection of the material indicated that it looks to be rust and TVA sample results confirm that. TDEC sent a sample of the material to the state laboratory operated by the Tennessee Department of Health for independent analysis and those results have not yet been received. The particles are large enough that they do not pose inhalation concern.



Sample of rust-like particles found in the TVA employee parking lot Northeast of the stacks at the TVA Kingston plant.

Community Activities

TDEC continues to attend and participate in the Long Term Recovery Committee and the Community Action Group meetings along with EPA and TVA. A schedule of community outreach events for the Kingston Ash Recovery Site in which TDEC plans to participate includes:

December 14, 2009 – CAG Public Meeting – Roane State Community College, 6:00

December 16, 2009 – LTRC Meeting – Roane County Courthouse, 4:30

December 17, 2009 – Media Tours – Kingston Cleanup Site

January 12, 2010 – Availability Session – TVA Outreach Center, 5:30

February 11, 2010 - Public Meeting – Theater at Roane County High School, 5:30

Contact Information

If you have any questions or need additional information, please feel free to call TDEC's On-scene Coordinator at the Kingston Recovery Site, Barbara Scott. You can reach her at 865-230-1211, or by email Barbara.scott@tn.gov.

TDEC has additional information and monitoring data on the department's TVA Kingston Update Web page at www.tn.gov/environment/kingston.

YEARLY WRAP-UP

Early in morning on December 22, 2008, a dike failed at the TVA Kingston Fossil Plant. More than 5.4 million cubic yards of coal ash spilled from an on-site landfill to cover more than 300 acres of surrounding land and water. While there were no immediate injuries caused by this extraordinary ash slide, the area's physical and natural environment has been dramatically impacted by this spill. Citizens' lives have been disrupted; water quality has been impaired and aquatic habitat has been destroyed.

As the one year anniversary of the failure approaches, the cleanup at the TVA Kingston Fossil Plant continues under the oversight of EPA and TDEC. In May 2009, EPA issued an Administrative Order on Consent to oversee cleanup at the site under the federal Superfund law. The enforcement order issued by TDEC in January 2009 continues to be fully enforceable, and the two regulatory agencies are working closely together and with other state and federal agencies to protect public health and address environmental issues.

State Response

A number of agencies from the state of Tennessee responded to the Kingston site immediately and continue to be engaged over the long term. State agencies involved with the response and ongoing cleanup effort include the Departments of Environment and Conservation and Health, as well as the Tennessee Wildlife Resources Agency. The Tennessee Emergency Management Agency coordinated the initial emergency response.

- TDEC acted quickly to issue an enforcement order against TVA in January 2009. (The order is available at www.tn.gov/environment/kingston under the "Commissioner's Order" link.) In addition to outlining efforts that had to be taken at the TVA Kingston facility to manage and clean the spilled ash for the protection of the local community and the environment, the order required information from TVA related to the cause of the release and addressed the stability of other TVA sites in Tennessee. The initial order did not assess civil penalties or Natural Resource Damage Assessments, but did reserve the right to do so in the future. The process for determining appropriate civil penalties and damages is currently underway.
- The department is dedicating a considerable amount of time and resources to ensuring the cleanup at Kingston is done appropriately and in the best interests of the community and environment. Under the enforcement order, TVA reimburses TDEC for costs, including time. To date, TDEC has billed TVA just more than \$2.1 million and has been reimbursed nearly \$1.9 million.
- Immediately following the failure, TDEC staffed the Joint Operations Center and Joint

Information Center along with EPA, local and state emergency responders, TVA and other agencies. As the operations transitioned from emergency response to ongoing recovery, these centers were closed, though TDEC, EPA and other agencies continue having a presence at the spill site. In addition, TDEC staffed an office at the Roane County Health Department as a resource for local citizens to go ask questions and get information. As of December 2009, the office has not been utilized by community members in some time, and TDEC staff at that facility will be transitioning over to the cleanup site to work with the department's on-scene coordinator. TDEC's on-scene coordinator was assigned in May 2009, following EPA's Administrative Order on Consent. The department welcomed EPA's Order and appreciates the ongoing partnership with EPA. This successful partnership is vital to ensuring the TVA ash spill is cleaned thoroughly and in a manner that is protective of both the public and environment.

- The Tennessee Department of Health continues to play a critical role in working with TDEC and assessing and ensuring ongoing public health protection. In the weeks following the spill, TDH went door-to-door to conduct a health survey and to share information with area residents. They also provided information to area medical practitioners. TDH operates the state lab that analyzes all the samples collected by the Department of Environment and Conservation, and provides health assessors to determine whether adverse health effects are likely based on the data.
- In addition to working with TDEC, the Department of Health also works with federal health agencies, including the Agency for Toxic Substances and Disease Registry (ATSDR), and is finalizing a Public Health Assessment for the area in coordination with ATSDR. That document was released for public comment on Dec. 11 and is available on the Dept. of Health's Web site at <http://health.state.tn.us/coalashspill.htm>. Public participation is encouraged and comments can be submitted by email to EHP.Health@tn.gov. The public comment period will last until February 9, 2010.

Additional Resources and Expertise

In addition to partnering with other state, federal and local agencies, and reviewing outside, independent data, the Department of Environment and Conservation has also enlisted the assistance of outside resources and experts. Those include:

- Dr. David Kosson, Vanderbilt University – provided information regarding coal ash and its properties.
- U.S. Army Engineer Research and Development Center (ERDC) – as national experts on dredging and environmental chemistry, ERDC provided advice on the dredging plan before dredging operations were authorized to begin and has helped assess that operation and its impacts. After dredging was underway, ERDC conducted a study to determine whether continued cleanup of the ash by dredging the Emory River would promote the release of metals within the ash and pose additional risks to the environment. The study can be found on TDEC's Web site at http://www.state.tn.us/environment/kingston/emory_metals.shtml.
- SAIC/Benham – providing geotechnical engineering services to assist the department in overseeing TVA's review of all coal ash impoundments in Tennessee.
- TDEC Advisory Board – in addition to TDEC personnel and Benham, Dr. Bruce Tschantz, professor emeritus from the University of Tennessee and Karrie Jo Shell from EPA Region IV participated in an Advisory Board that reviews TVA's geotechnical work and provided recommendations to TDEC for safe management of coal ash in Tennessee into the future. That report is available at http://www.state.tn.us/environment/kingston/adv_board_report.shtml.

Cleanup Progress (Order Update)

Under the Commissioner's Order, TVA was instructed to develop several plans to assess the natural resource damage, to monitor all environmental media, to ensure health and safety of the public and site workers, and to remediate the areas affected by the release. TVA has implemented a number of activities in compliance with the Commissioner's Order, including:

- Remediation efforts to remove ash from the Emory River and embayment areas. Remediation of the Church Slough was completed first. Emory River dredging continues.
- In accordance with EPA's Administrative Order, removal of ash from the Emory River and the adjacent embayments is designated as a time critical action under the federal Superfund law. In July, a river dredging contract was secured by TVA to accelerate removal of ash from the river and Swan Pond Slough. To date, more than 2 million cubic yards of the estimated 3 million cubic yards of ash under the time critical action has been dredged from the river and staged for disposal off-site.
- The recovered ash must be disposed of in an approved landfill under the federal Superfund law. TVA has contracted a landfill in Perry County, Alabama for the disposal of the time-critical material and, year-to-date, has shipped more than 700,000 cubic yards in lined and covered railcars.
- Planning for the cleanup of the remaining 2.4 million cubic yards is underway under EPA oversight in cooperation with TDEC.
- A comprehensive monitoring and sampling plan is in place.
- There are rigorous dust suppression systems in place for working and community safety and to prevent the migration of dust offsite.
- Other site migration systems include the installation of sediment ponds for treatment of run-off prior to discharge to the river and implementation of other erosion control measures such as matting and seeding.

- Hazardous Waste Operations (HAZWOPER) safety requirements were implemented in July.
- Dredging continues in the ash and stilling ponds to maintain free water volume and provide enough retention time to reduce suspended solids prior to discharge to the river.

Sampling and Monitoring

The Department of Environment and Conservation has been conducting independent sampling since the release and continues to do so. Samples collected include air, drinking water, private wells, river water, soil and ash. Samples are analyzed at the state laboratory operated by the Tennessee Department of Health and are posted to TDEC's Web site as they are received from the lab. In general, monitoring and sampling results have remained consistent throughout the course of the cleanup. General information is included below, and sample results are available on the department's Web site at www.tn.gov/environment/kingston under "Results Reporting."

- Air – Monitors measuring particulates 10 microns in size and smaller (PM10) and monitors measuring particulates 2.5 microns in size and smaller (PM2.5) have not, to date, indicated an exceedance of National Ambient Air Quality Standards. Lab analysis has detected some metals at very low levels. The Department of Health indicates these levels do not present health concerns.
- Drinking Water and Well Water – Regular testing performed by TDEC of municipal drinking water supplies indicates drinking water continues to meet drinking water standards established by EPA for public health protection. At no time since the spill on Dec. 22, 2008, has municipal drinking water failed to meet standards.

TDEC sampled more than 100 private wells in a four mile radius of the site and none indicated metals above primary drinking water standards. The department continues to sample "sentinel" wells at least quarterly to evaluate ground water quality over time. The last round of sentinel well sampling was conducted on Nov. 16, 2009 and all results were well within drinking water standards.

- Fish Tissue Monitoring – Fish are being collected each spring and fall by the Tennessee Wildlife Resources Agency, Oak Ridge National Lab and TVA to be analyzed for metals associated with coal ash. Fall collection has been completed. The agencies collected largemouth bass, bluegill, and channel catfish from Emory River Mile 0.9, 2.5 and 8.0; and CRM 1.5 and 8.0. Largemouth and bluegill also were collected in the vicinity of LERM 2.0 and composite samples of gizzard shad were collected at several locations for analysis of metals in whole fish. Those results will be made available once the analysis is complete. If the updated data indicates a need, TDEC will update the existing fishing advisory, which predates the ash spill. Until that time, the public is urged to follow the existing advisory. There was no justification, based on the spring results, to modify the advisory.
- River Water – The Department of Environment and Conservation began independent surface water sampling of the Emory, Clinch and Tennessee Rivers immediately following the release and continues to sample at least twice per week. The samples are analyzed for a number of constituents. Among the most closely watched are arsenic, mercury and selenium.
 - Arsenic: Fourteen arsenic samples of 334 samples taken in the lower Emory River downstream of the spill exceeded the lowest water quality standard of 10 parts per billion. There have been no arsenic exceedances noted in the Clinch River. Local drinking water has been extensively monitored at the water intake from the river and in the finished water going to customers. No exceedance has ever been found in the raw or finished water. As dredging operations continue, the department is carefully watching the arsenic levels in the dredge plume and ash pond effluent.
 - Mercury: The Emory River has a fish consumption advisory for mercury that predates the ash spill. There have been numerous exceedances of the water quality criterion of 0.05 parts per billion for mercury noted in the water column. These exceedances include areas well upstream of the ash spill, including Emory River Mile 12.1 in Harriman and in the Clinch River upstream of the confluence with the Emory.
 - Selenium: There has, to date, been one sample that exceeds water quality criterion for selenium of 5 parts per billion. Almost all water column samples at all sites are non-detect for selenium, though there have been a few low detects at all stations, including the upstream control sites.
- Soil and Ash – TDEC collected 29 soil and ash samples early in the cleanup process. Sixteen were soil from impacted residences, as well as some background samples from outside the impacted area. The remaining 13 samples were ash. For residential soil, the results indicated that concentrations were well below any levels that could cause harm. The ash samples contained what would be expected for coal ash - some metals, including arsenic, and some radioactive materials of natural origin. The metals and radiation were not at levels that would be expected to cause adverse health effects from accidental/occasional exposure through ingestion or inhalation. However, breathing any kind of dust can aggravate respiratory conditions and the state encourages everyone to avoid contact with the ash.

Continuing TDEC Involvement

Environment and Conservation is committed to ensuring the cleanup at Kingston is accomplished and monitored.

- Air monitoring, sampling from drinking water facilities and sentinel wells, and sampling of the Emory, Clinch and Tennessee Rivers, as well as fish tissue monitoring, will continue.
- Consistent with Section XIII, 5.A. of TDEC's Commissioner's Order, the department's expectation remains that all solid waste released from the TVA Kingston landfill, to the maximum extent practicable, will be removed from the Emory River, Swan Embayment, tributaries to the Emory River and the ground surface and that natural resources will be restored to their original state.

TDEC has communicated to TVA the department's expectation that the ash removal and restoration of the waters of the state will continue without interruption during the transition from the time critical actions (dredging of ash from the Emory River) to the non-time critical actions.

One of the other actions covered by the non-time critical phase will be closure of the developed ash waste cells known as Dredge Cells 1, 2, 3 and 4 and closure of the ash process area known as the ball field. TDEC agrees that EPA will serve as lead agency to oversee these actions. TDEC will remain an active participant with EPA in the non-time critical action and will provide review of all work plans and remedy designs for concurrence with EPA that the actions meet Tennessee's solid waste rules and the requirements of the Commissioner's Order.

The Engineering Evaluation and Cost Analysis (EE/CA) work plan describes the non-time critical remedy alternatives for

restoring the area once ash is removed from the Emory River. As mentioned above, the public comment period for this document, along with the Draft Community Involvement Plan, has been extended to Dec. 20, 2009. The materials are available for review on EPA's Web site at www.epakingstontva.com in the "Document Libraries" section under "Non-time Critical Removal."

- TDEC is in the process of reviewing the state's rules and regulations for the management of coal ash with an eye toward implementing the recommendations made by TDEC's Advisory Board. The Advisory Board's recommendations, along with new rules from EPA which are expected to be proposed by the end of the year, will govern how coal ash in Tennessee is safely managed into the future.

**If you have questions,
contact:**

**Tennessee Department of
Environment and
Conservation
888-891-8332**

**Updates, including sample
results, monitoring plans,
enforcement orders and TVA
submittals are available on the
Internet at:**

**www.tn.gov/environment
under "TVA Kingston Update."**

